

Patent Claims

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1. Residual dust monitoring in safety vacuum cleaners, characterized in that at least one measuring electrode (11) is mounted downstream behind the filter unit (4), which measuring electrode (11) conducts a current generated between measuring electrode and particles in dependence on the particle concentration, to a measuring value processing (12).

2. Residual dust monitoring in safety vacuum cleaners, according to claim 1, characterized in that the measuring electrode (11) is arranged downstream behind the filter (4) and behind the turbine (5).

3. Residual dust monitoring in safety vacuum cleaners, according to claim 2, characterized in that the measuring electrode (11) is arranged at the free end of the outlet tube (3) within this tube.

4. Residual dust monitoring in safety vacuum cleaners, according to claim 2, characterized in that the measuring electrode (11) is arranged in the vicinity of the turbine (5) in the outlet tube (3) or in the motor block of the turbine (5) itself.

5. Residual dust monitoring in safety vacuum cleaners, according to claim 1, characterized in that the measuring electrode (11) is mounted downstream behind the filter but in front of the turbine.

6. Residual dust monitoring in safety vacuum cleaners, according to claim 5, characterized in that the measuring electrode (11) is mounted downstream directly on or in the vicinity of the output surface of the filter (4).

7. Residual dust monitoring in safety vacuum cleaners, according to claim 5, characterized in that the measuring electrode (11) is mounted in an intermediate tube or an intermediate chamber between filter (4) and turbine (5).

8. Residual dust monitoring in safety vacuum cleaners, according to claim 5, characterized in that the measuring electrode (11) is mounted in the vicinity of the turbine blade in the turbine housing (5).

9. Residual dust monitoring in safety vacuum cleaners, according to claim 5, characterized in that the measuring electrode (11) covers the entire flow cross-section.

10. Residual dust monitoring in safety vacuum cleaners, according to claim 1 ~~claims 1 - 9~~, characterized in that the measuring electrode (11) is constructed in grid form and is mounted, electrically insulated, in the safety vacuum cleaner.

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11. Residual dust monitoring in safety vacuum cleaners,
according to ~~claims 1 - 10~~ ^{claim 1}, characterized in that the turbine
(5) is either directly, or artificially grounded.

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12. Residual dust monitoring in safety vacuum cleaners,
according to ~~claims 1 - 11~~ ^{claim 1}, characterized in that the housing
(1) is either directly, or artificially grounded.

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13. Residual dust monitoring in safety vacuum cleaners,
according to ~~claims 1 - 12~~ ^{claim 1}, characterized in that all parts of
the safety vacuum cleaner coming in contact with the particles
are either direct, or artificially grounded, with the
exception of the measuring electrode (11).

14. Residual dust monitoring in safety vacuum cleaners,
according to claims 1 - 13, characterized in that in the
differential amplifier (12) the measuring current is suitably
amplified and is conducted onward to a measuring value
further-processing unit.

15. Residual dust monitoring in safety vacuum cleaners,
according to claim 14, characterized in that the measuring-
value further-processing unit carries out beatwise a desired
value/actual value comparison and gives an output signal on
undershooting or exceeding of the desired value.

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16. Residual dust monitoring in safety vacuum cleaners,
according to claim ~~15~~ ¹, characterized in that by this output

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signal an optical and/or acoustic alarm is given, and/or that the turbine (5) is switched off, and/or that an automatic changing of the filter (4) and/or of the turbine (5) with filter (4) is performed.

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17. Residual dust monitoring in safety vacuum cleaners, according to ~~claims 1 - 16~~ ^{claim 1}, characterized in that the measuring current is shown on a display continuously or at intervals of time, either directly or in the form of the number of particles to be correlated, or in the form of the proportional filter blocking, or in the form of the degree of filter damage.

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18. Residual dust monitoring in safety vacuum cleaners, according to ~~claims 1 - 17~~ ^{claim 1}, characterized in that the value of the measuring current is recorded continuously or at intervals of time into a storage unit, which storage unit can be located in the safety vacuum cleaner itself or also externally.

19. Residual dust monitoring in safety vacuum cleaners, according to claims 1 - 18, characterized in that the evaluating unit is coupleable over an interface with an external data processing installation or a computer.